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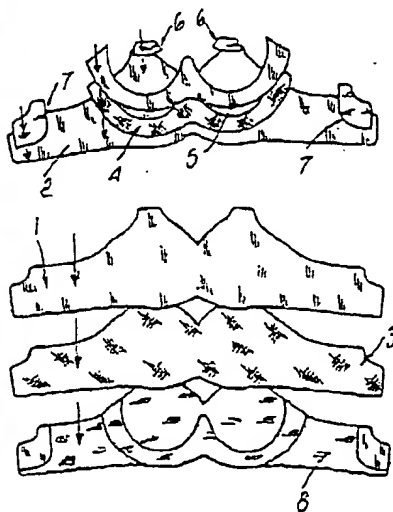
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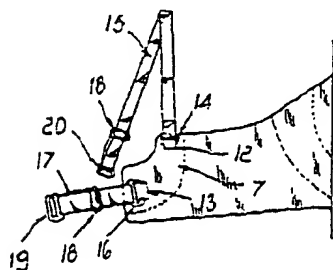
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(54) Title: GARMENT, PARTICULARLY BRASSIERE



(57) Abstract: A garment, particularly a brassiere, constituted by a single piece composed of a plurality of layers of different materials, mutually associated by way of a film (3) of heat-sealable resin; at least one reinforcement element (4, 5, 6, 7, 21) being inserted within the layers, and appropriate seats (11, 12, 13, 24) for the removable application of a pair of shoulder straps (15) and a pair of side straps (17) are formed at the reinforcement elements.



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## GARMENT, PARTICULARLY BRASSIERE

### Technical Field

The present invention relates to a garment, particularly a brassiere.

### Background art

5 Brassieres are currently commercially available which are usually made with fabrics divided into several parts and then joined one another by stitched seams.

Hooks and shoulder straps, suitable to allow wearing of the garment, are added in the same manner.

10 US patent 4,701,964 is further known which discloses a method for obtaining, for example, a garment, particularly an item of underwear, in which an additional element connected by means of a thermoplastic adhesive is applied in at least one part of the garment.

The patent also discloses, among its various embodiments, brassieres 15 which have an additional element with a functional/ornamental characteristic affecting a limited region adjacent to the cup.

Considerable difficulty in applying this type of technology is encountered if it is to be applied to the entire brassiere, application being limited to a small surface.

20 A second patent, US 5,154,659, is also known which provides a brassiere made of a plurality of parts, including a cup, which are composed of multiple layers of different materials, particularly moldable and non-moldable materials.

Each part is subsequently associated with the others and with the 25 corresponding hooks or shoulder straps by means of normal stitched seams which reduce the degree of comfort of said garment.

A third patent, US 5,820,443, is known which provides a brassiere made of two separate parts, a right one and a left one, and in which there are absolutely no stitched seams for joining the various components.

30 The various hooks and shoulder straps are in fact connected by thermal

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bonding of two layers of the material used, said material being also composed of thermoplastically fusible fibers.

The two right and left parts also are associated one another by means of thermally produced welds of the material itself.

5 As in the preceding cases, the brassiere is composed of a plurality of parts which must then be mutually associated, entailing additional costs.

The main drawback of all these embodiments is that they provide a product which is necessarily constituted by a plurality of parts which must be associated one another in various manners.

10 Another drawback of conventional types relates to the fact that it is impossible to rapidly remove the hooks and the shoulder straps, since they are bonded or stitched, depending on the various conventional types, to the body of the brassiere.

#### Summary of the Invention

15 The aim of the present invention is therefore to solve the noted problems, by eliminating the drawbacks of the cited prior art and by providing a garment, particularly a brassiere, which allows the user to achieve better comfort in use, minimizing or fully eliminating the stitched seams for joining one another the various components, including hooks and shoulder  
20 straps.

Within the above aim, an object is to provide a garment which allows to use the garment on both sides, with different patterns and colors.

Another object is to provide a garment which optionally allows easy and immediate removal, for example for possible replacement, of said hooks and  
25 shoulder straps.

Another object is to provide a garment which is structurally simple and has low manufacturing costs.

These and other objects which will become better apparent hereinafter are achieved by a garment, particularly a brassiere, which is characterized in  
30 that it is constituted by a single piece composed of a plurality of layers of

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different materials, associated one another by way of a film of heat-sealable resin, at least one reinforcement element being inserted within said layers.

#### Brief description of the drawings

Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a particular embodiment, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figures 1 and 2 are front views of two components of a brassiere, made of fabric of different colors, respectively a color A and a color B;

Figure 3 is a front view of a third component, produced using a film of thermoplastic resin;

Figure 4 is a front view of the arrangement and application of reinforcement parts to the component of color B of Figure 2;

Figure 5 is a front view of an intermediate component;

Figure 6 is a front view showing the application to the intermediate component of the component having the color B by means of the interposed resin film of Figure 3;

Figures 7 and 8 are front views of a cup, arranged respectively on the side color B, and on the side with color A, and of a plurality of slots for the passage of hooks and shoulder straps;

Figures 9 and 10 are side views of a detail, respectively on the side with color B and on the side with color A, related to the insertion of the shoulder straps in the slots;

Figure 11 is a front view of a further embodiment of the brassiere, according to the invention, in which a reinforcement element is applied along the whole perimeter of the components; and

Figure 12 is a rear view of half of the brassiere, according to the invention, showing two possible embodiments of hooks, both adapted for removable attachment of the shoulder straps.

Ways of carrying out the Invention

With reference to the figures, 1 designates a first component for a brassiere, obtained by mat-like cutting of a fabric of a given color, designated by the letter A.

Reference numeral 2 designates a similar second component in another color, designated by the letter B.

Figure 3 shows a resin film, designated by the reference numeral 3, which is modeled in the same manner as said first and second components.

The following elements are placed, in this order, on said second component 2: a first central reinforcement 4, constituted by a W-shaped resin film, as shown in Figure 4; a second central reinforcement, designated by the reference numeral 5, geometrically identical to said first central reinforcement 4 and constituted by fabric in color B, which lies above said first reinforcement; and four more reinforcements, two upper ones and two lower ones, respectively designated by the reference numerals 6 and 7 and made of heat-sealable material.

After press-formation with a press for heat-sealable materials, a first intermediate component is obtained; such intermediate component is designated by the reference numeral 8 and is shown in Figure 5.

The resin film 3 is placed, as shown in Figure 6, in an intermediate position between said first intermediate component 8 and said first component 1, and the entire assembly is placed in a press for heat-sealable materials; this operation produces a second intermediate component which has, on its two sides, the two different colors A and B of the respective fabrics.

The body of the brassiere, designated by the reference numeral 9, is obtained after pre-forming the cups 10 and after shaping, by means of a press with a die-cutter, three pairs of slots, respectively designated by the reference numerals 11 for the first one, which is formed in said upper reinforcement 6, and 12 and 13 for the second and third ones, both arranged on the lower reinforcement 7.

Conveniently, the pairs of slots can also be obtained during pressing of the components.

Each slot is constituted by two parallel cuts, formed through the fabrics and the respective reinforcements, inside which an appropriate removable  
5 hook is arranged; said hook is respectively designated by the reference numeral 14 if it supports a shoulder strap 15 and by the numeral 16 if it supports a side strap 17.

The shoulder strap 15 and the side strap 17 also are removable, since they are rigidly coupled to the body of the brassiere only by means of the  
10 respective hooks 14 and 16.

Moreover, said straps have, in a substantially intermediate position, a buckle 18 which allows to adjust the length of said shoulder straps and side straps.

At the end that lies opposite the end for anchoring to said hook 16, the  
15 side strap has a closure hook 19.

At the end that lies opposite the end for anchoring to said hook 14, the shoulder strap has a second hook 20 for connection to first slot 11, which is not visible in Figures 9 and 10.

Said slots are constituted, as mentioned, by slits formed in an appropriate  
20 direction, as shown in Figures 7 and 8, so that the traction stress applied by the shoulder straps and the side straps occurs parallel to said slits.

In a further embodiment of the brassiere, according to the invention, shown in Figure 11, a reinforcement element 21 is applied, preferably with the techniques described above, along a perimetral zone 22 of the  
25 component of color B, for example. The reinforcement element 21 extends along the whole perimetric contour of the brassiere body up to a boundary line 23, shown with dashed line in Figure 11.

Hooks usable for removable connection of the shoulder straps, for example, to the brassiere body, according to the invention, are shown in  
30 Figure 12.

In a first embodiment the hook 26 has a "butterfly" shape, is made of separable parts, and is connected to the brassiere body 9, by ultrasonic heat welding or sealing or by similar techniques, in order to avoid stitching.

Such a hook is described in the Austrian Patent Application 09/580254,  
5 filed on May 25, 2000 by Fildan Accessories.

A second embodiment of the hook, similar to that of the first embodiment, but having only one wing, is shown in Figure 12, connected to a button 24, and is designated by the reference numeral 25.

The button 24, has been devised by the Applicant and is attached to the  
10 brassiere body, according to the present invention, by heat welding or sealing.

Use is therefore as follows: with reference to Figures 9 -12, the shoulder straps 15 and side straps 17 can be removed by means of the respective hooks 14, 20, 25 and 16, which are removable from the slots 12, 11 and 13,  
15 the button 24, respectively.

The reverse operation can then be performed, connecting the shoulder straps 15 and side straps 17 to said slots or button, by means of the respective hooks, but on the opposite side of the brassiere, thus passing from the condition of Figure 9, in which one has a brassiere in color B, to  
20 the situation of Figure 10, in which a brassiere in color A is used.

Finally, by simple manual pressure, the cups are turned out in the direction of use.

It has thus been observed that the present invention has achieved the intended aim and objects, since a brassiere composed of a single piece,  
25 without any stitched seams, with removable shoulder straps and hooks, and easily usable on both sides, has been devised.

The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

The materials used, as well as the dimensions that constitute the  
30 individual components of the invention, may of course be the most pertinent



according to specific requirements.

The disclosures in Italian Patent Application No. TV99A000089 from which this application claims priority are incorporated herein by reference.

CLAIMS

1. A garment, particularly a brassiere, characterized in that it is constituted by a single piece composed of multiple layers of different materials, mutually associated by way of a film (3) of heat-sealable resin, at least one reinforcement element (4, 5, 6, 7, 21) being inserted within said layers.

2. The garment according to claim 1, characterized in that it has, at at least two of said reinforcement elements (6, 7), appropriate seats (11, 12, 13, 24) for the removable application of a pair of shoulder straps (15) and of a pair of side straps (17).

3. The garment according to claims 1 and 2, characterized in that said reinforcement elements are constituted by a first central reinforcement (4) which is constituted by a W-shaped resin film, by a second central reinforcement (5) made of fabric which is geometrically identical to said first central reinforcement, and by four more reinforcements, two upper ones (6) and two lower ones (7), constituted by heat-sealable material.

4. The garment according to claims 1 and 3, characterized in that said seats are constituted by a first pair of slots (11) obtained at said upper reinforcements (6) and by second (12) and third (13) pairs of slots obtained at said lower reinforcements (7), each one of said first (11), second (12) and third (13) pairs of slots being constituted by two parallel slits produced through the fabrics and the respective reinforcements (6, 7) and suitable for the insertion of appropriate removable hooks (14, 16, 20).

5. The garment according to claims 1 and 4, characterized in that said removable hooks (14, 16, 20) allow to connect a pair of shoulder straps (15) and a pair of side straps (17).

6. The garment according to claims 1 and 5, characterized in that said slits that constitute said slots (11, 12, 13) are formed in the same direction as the traction stress applied by said shoulder straps (15) and side straps (17) to the body (9) of the brassiere.

7. The garment according to claim 1, characterized in that said at least one reinforcement element is constituted by a perimetral reinforcement element (21), applied continuously along the perimetric zone (22) of the body (9) of the brassiere.

5 8. The garment of any of claims 1, 2, 3 or 7, characterized in that said seats are constituted by buttons (24), applied to the body (9) of the brassiere.

9. The garment of any of claims 1, 2, 3, 7 or 8, characterized in that said shoulder (15) and/or side (17) straps, are connected to the body (9) of the brassiere by way of separable hooks (25, 26), said hooks (25, 26) being  
10 either removably connected to said buttons (24) or, with a separable part thereof, directly to the body of the brassiere.

10. A method for obtaining a garment, such as a brassiere according to one or more of the preceding claims, characterized in that it comprises the mat-like cutting of a first component of a color A, of a second component of  
15 a color B, and of a resin film (3); the cutting, with a press and a die-cutter, of said first (14) and second (15) central reinforcements and said upper (6) and lower (7) reinforcements or of said perimetral reinforcement element (21), appropriately arranging said reinforcements on said second component (2); for application in a press for heat-sealable materials, so as to obtain a  
20 intermediate component (8) on which said resin film (3) and said first component (1) are superimposed and applied in the same press, so as to obtain a second intermediate component on which cups (10) are preformed by way of conventional technologies and appropriate seats (11, 12, 13, 24) are formed for the removable application of said shoulder straps (15) and  
25 side straps (17) by way of appropriate hooks (14, 16, 20, 25, 26).

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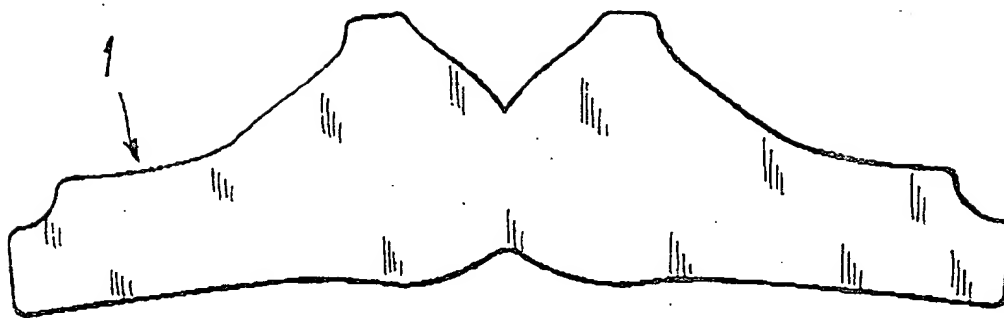


Fig. 1

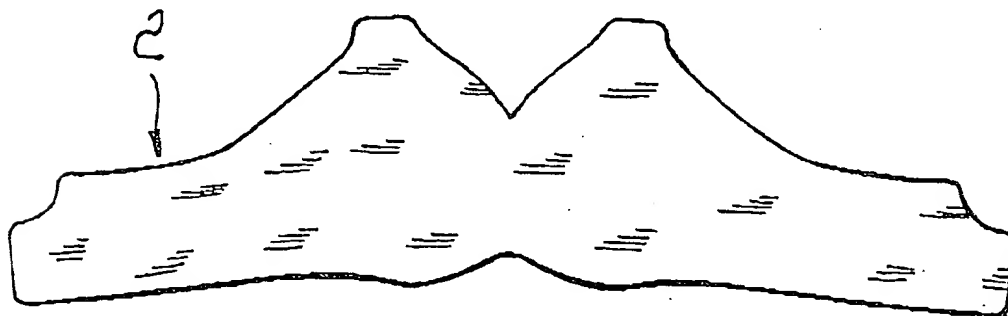


Fig. 2

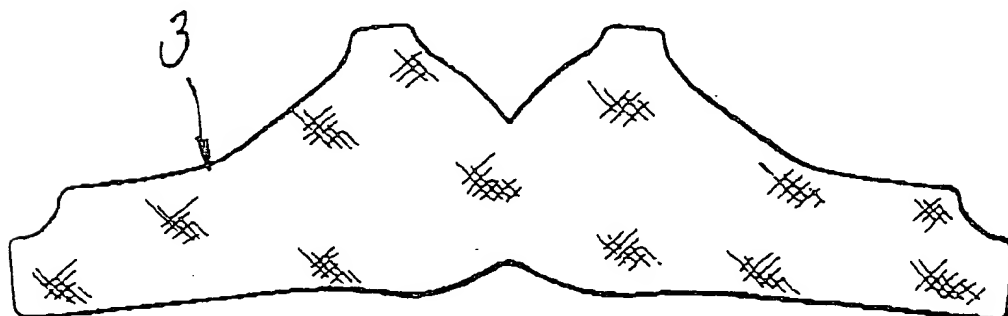
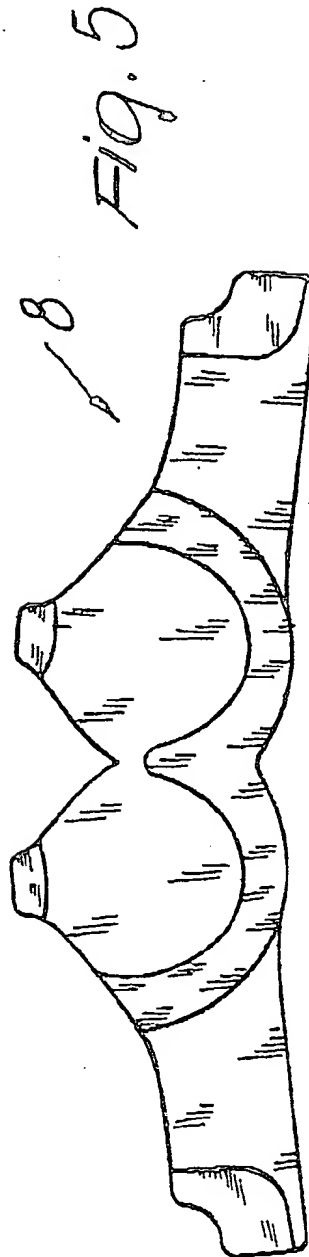
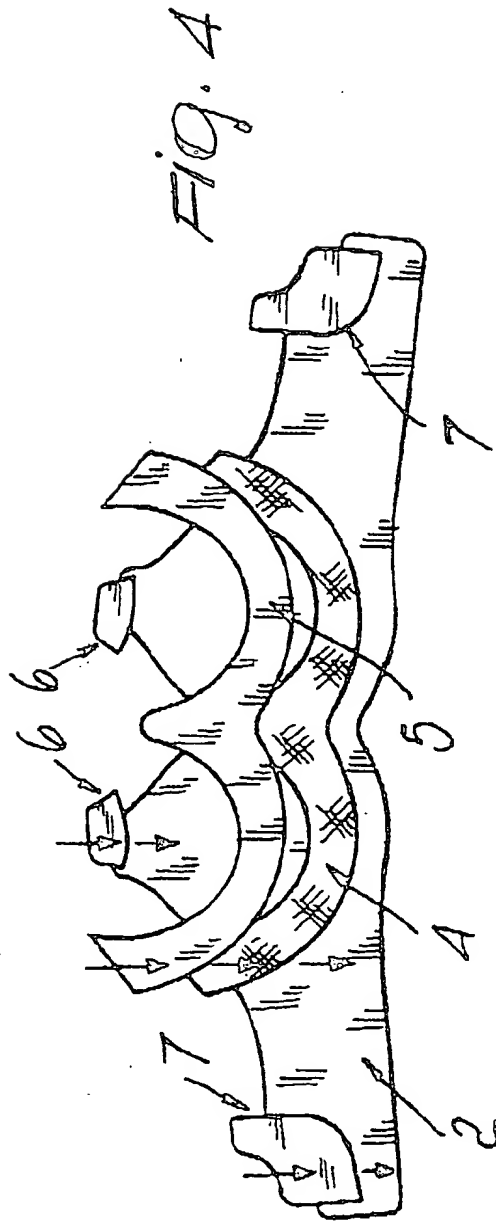


Fig. 3



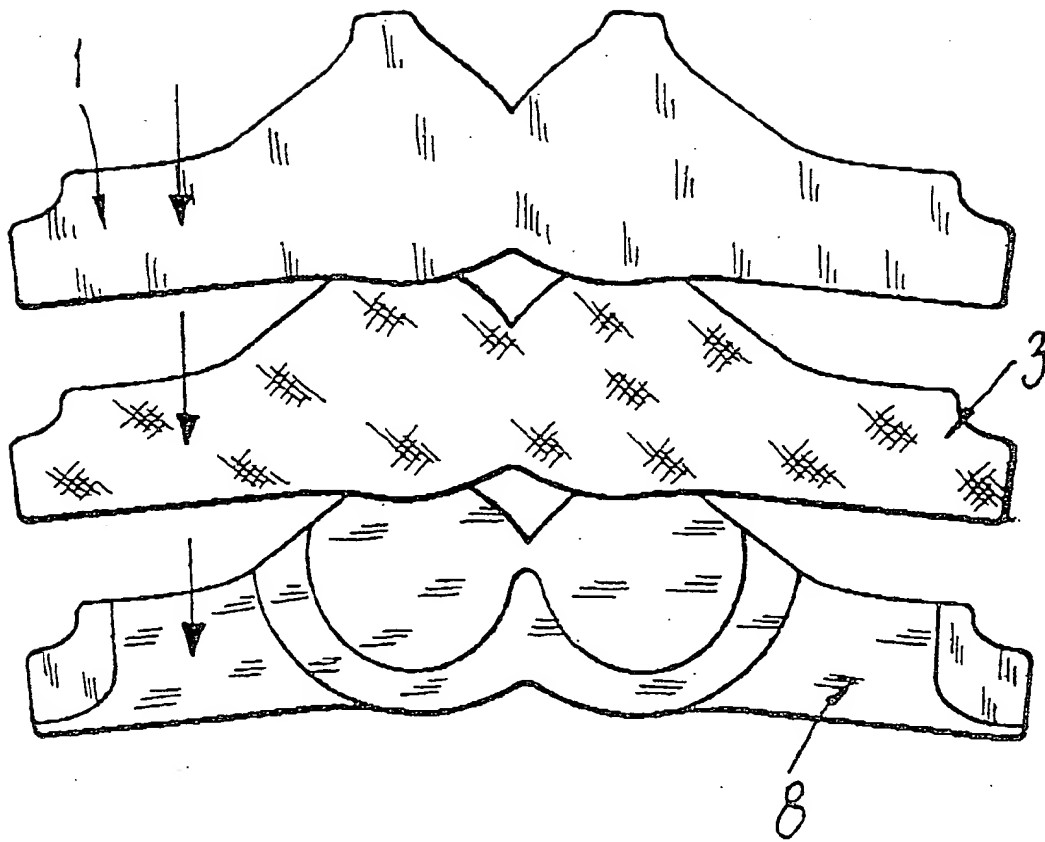


Fig. 6

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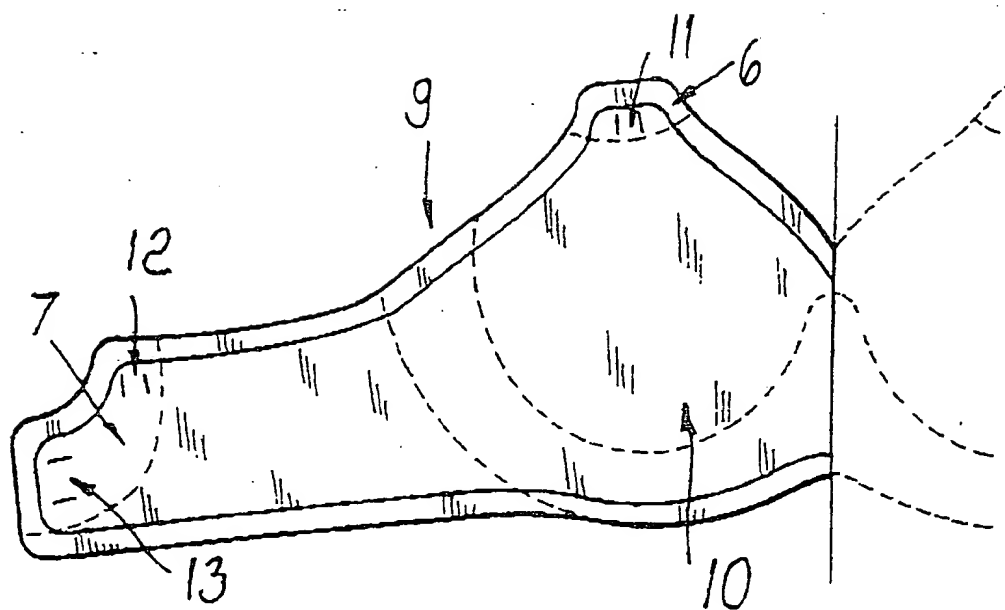


FIG. 7

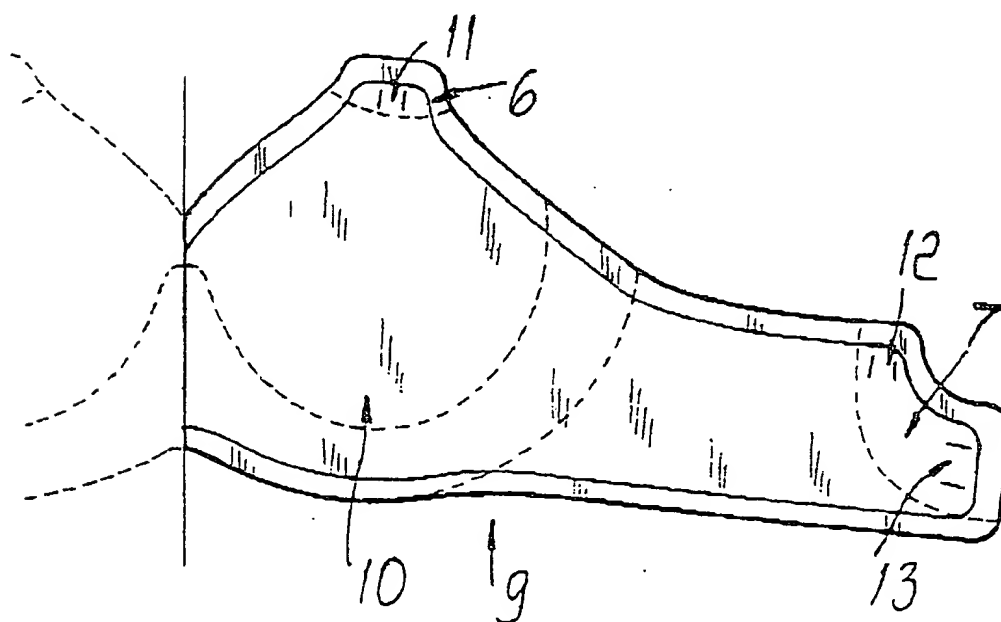
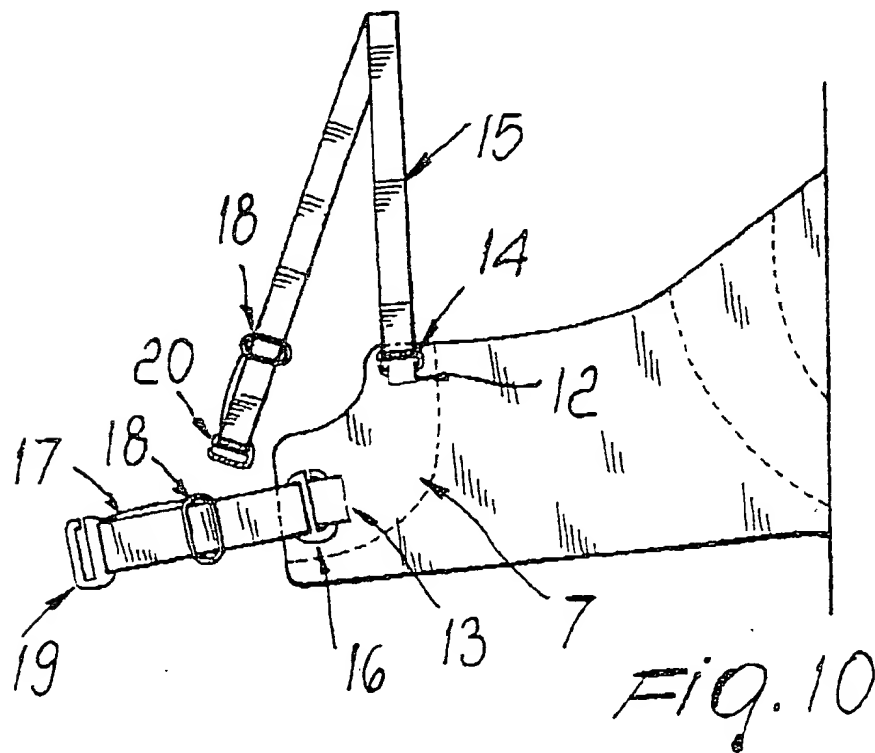
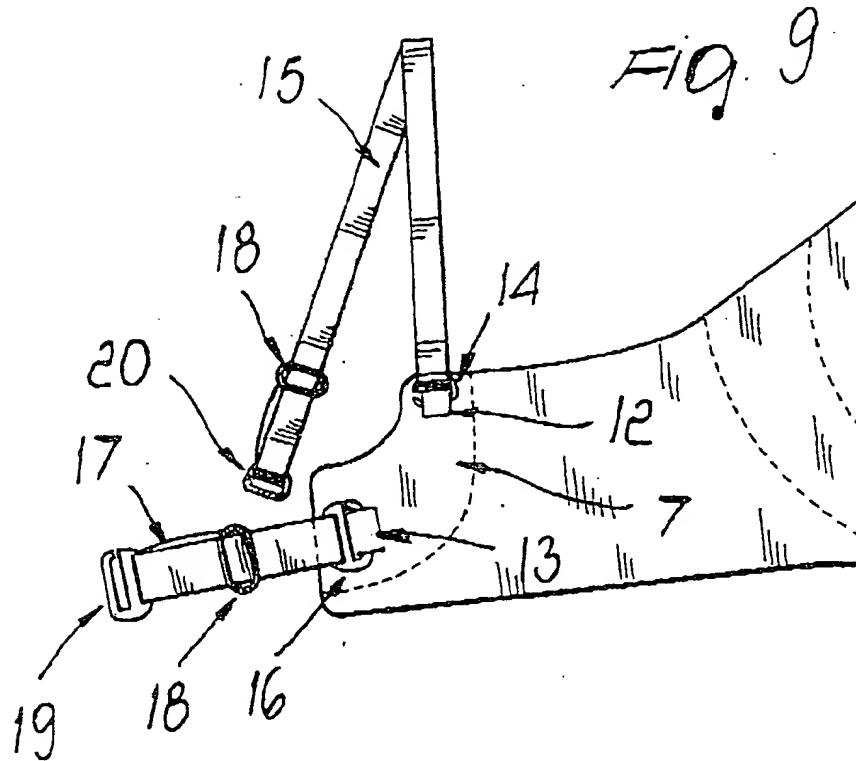


FIG. 8

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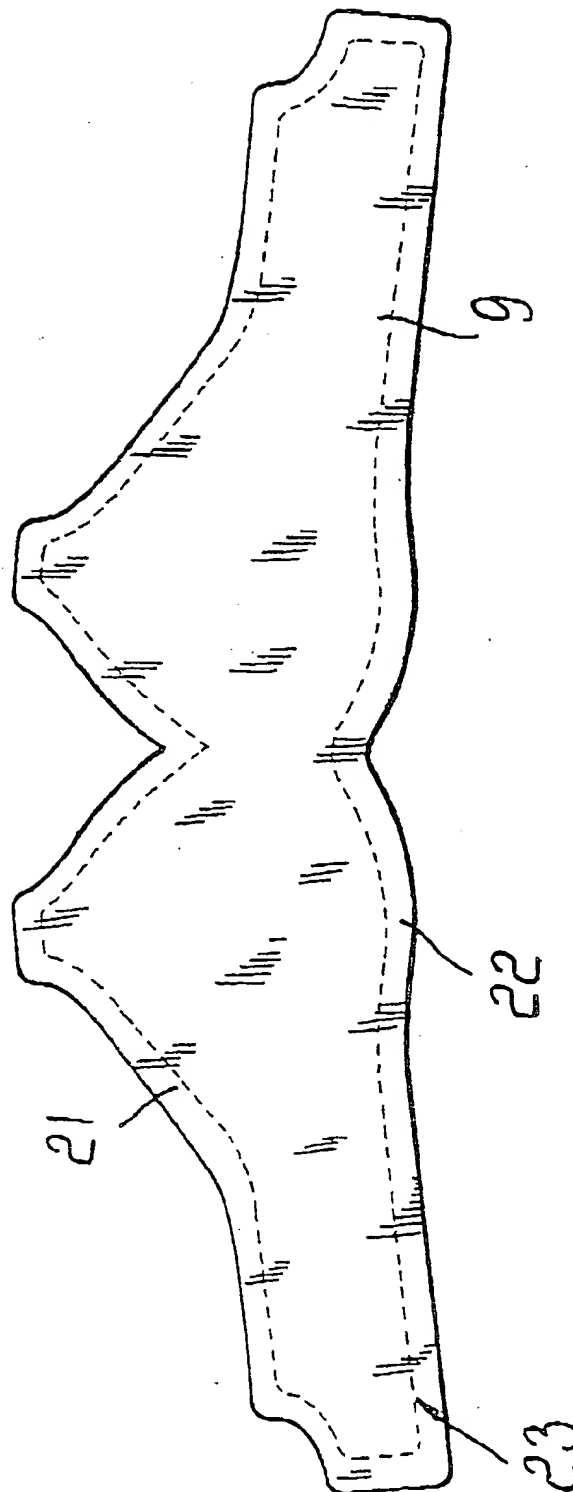


Fig. 11

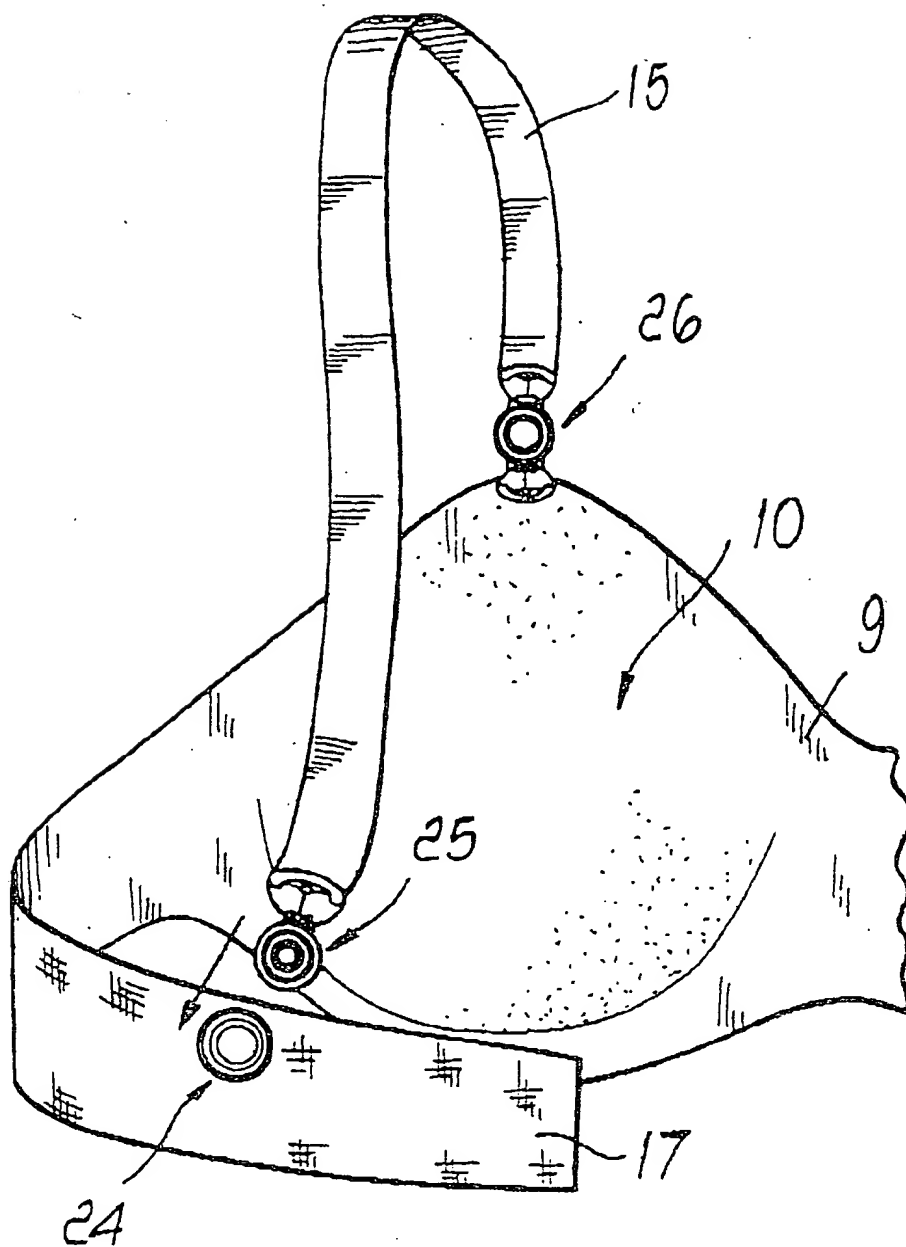


Fig. 12

# INTERNATIONAL SEARCH REPORT

International Application No  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5820443 A	13-10-1998	DE 29609672 U	02-10-1997
		AT 183895 T	15-09-1999
		BR 9703413 A	15-09-1998
		CN 1174686 A	04-03-1998
		CZ 9701669 A	17-12-1997
		DE 59700380 D	07-10-1999
		DK 809945 T	27-03-2000
		EP 0809945 A	03-12-1997
		ES 2138414 T	01-01-2000
		GR 3031946 T	31-03-2000
		HR 970300 A	30-04-1998
		HU 9700969 A, B	28-11-1997
		JP 3057027 B	26-06-2000
		JP 10088405 A	07-04-1998
		NO 972431 A	01-12-1997
		PL 320245 A	08-12-1997
		RU 2127535 C	20-03-1999
		SI 809945 T	31-12-1999
		SK 68497 A	10-12-1997
US 4076029 A	28-02-1978	NONE	
DE 1858902 U		NONE	
US 2797415 A	02-07-1957	NONE	
DE 29902124 U	06-05-1999	NONE	
US 1544386 A	30-06-1925	NONE	
US 3726286 A	10-04-1973	NONE	

## INTERNATIONAL SEARCH REPORT

national Application No

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A41C3/10 A41F15/00 A41C5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A41C A41F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 820 443 A (BURR REINHOLD MARKUS) 13 October 1998 (1998-10-13) cited in the application column 2, line 21 - line 25 column 3, line 62 - line 66; figures	1-10
Y	US 4 076 029 A (WIQUEL ATTILIO-WILLIAM) 28 February 1978 (1978-02-28) column 1, line 7 column 1, line 20 column 2, line 29 - line 30 column 2, line 49 - line 53 column 2, line 67 column 3, line 21 column 5, line 11 - line 32; figures 7,8 -/-	1-10

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 18 58 902 U (BAYER) 27 September 1962 (1962-09-27) page 7, line 13 page 8, paragraph 1; figures 1,2	1
A	US 2 797 415 A (SPANEL) 2 July 1957 (1957-07-02) column 3, line 1 - line 10 column 3, line 28 - line 36	1,2
A	DE 299 02 124 U (OTTO VERSAND GMBH & CO) 6 May 1999 (1999-05-06) page 1, line 20; claims 1,2; figure 1	1,2,4,5, 8
A	US 1 544 386 A (FRIDOLPH) 30 June 1925 (1925-06-30) page 1, line 75 - line 84; figure 3	1,4,5
A	US 3 726 286 A (WOLFSON F) 10 April 1973 (1973-04-10) column 4, line 36 - line 48	1

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